

## CLAIMS

1. Method for implementing internetworking of a set of Content Delivery Networks or CDN (CDN1, CDN2), the networks in said set being provided with respective caches, respective Directory Name Service or Domain Name Server (DNS) and respective content distribution systems to respective clients, as well as interface components (CIG) susceptible of being each associated to a respective network (CDN1) in said set of networks and co-operating with at least one similar interface component (CIG) associated to another network (CDN2) in said set of networks, the method comprising the step of

- collecting in said interface components (CIG) routing data related to the association of said contents and the caches which contain them, and being characterised in that it comprises the step of

- transferring (DNSI) said routing data from at least one of said interface components (CIG) to the Directory Name Service or Domain Name Server (DNS) of the respective network, whereby access by the client of said respective network of contents of the networks in said set of CDN (CDN1, CDN2) is implemented through the Directory Name Service or Domain Name Server (DNS) of said network.

2. Method according to claim 1, characterised in that the following steps are performed by at least one of said interface components (CIG):

- to receive data on the state of the cache and/or the contents of the respective network,

- to determine whether said contents require an updating or not, and

- to manage said updating by performing at least one step in the following group comprising:

- editing the respective database,

- editing the respective Directory Name Service tables,

- editing the respective log file archive,

- forwarding an update request message to said at least one similar component.

3. Method according to claim 1 or claim 2, characterised in that said interface components (CIG) communicate via a CNAP protocol.

4. System comprising a set of internetworked Content Delivery Networks or CDN (CDN1, CDN2) type networks, the networks in said set being provided with respective caches, respective Directory Name Service or Domain Name Server (DNS) and respective content distribution systems to respective clients, as well as interface components (CIG) susceptible of being each associated to a respective network (CDN1) in said set of networks and co-operating with at least one similar interface component associated to another network (CDN2) in said set of networks, said interface components (CIG) being configured to collect routing data related to the association of said contents and the caches which contain them, the system being characterised in that at least one of said interface components (CIG) is configured to transfer (DNSI) said routing data to the Directory Name Service or Domain Name Server (DNS) of the respective network, so that access by the client of said respective network to the contents of the networks in said set of CDN (CDN1, CDN2) is implemented through the Directory Name Service or Domain Name Server (DNS) of said network.

5. System according to claim 4, characterised in that at least one of said interface components (CIG) comprises:

- a module for receiving data on the state of the cache and/or the contents of the respective network,
- a module for determining whether said contents require an updating or not,
- a module for managing said updating by performing at least one step in the following group comprising:
  - editing the respective database,

- editing the respective Directory Name Service tables,
- editing the respective log file archive, and
- forwarding an update request message to said at least one similar component.

5       6. System according to claim 4 or claim 5, characterised in that said interface components (CIG) communicate via a CNAP protocol.

7. Interface component (CIG) for implementing Content Delivery Network or CDN (CDN1, CDN2) internetworking, the  
10 networks (CDN1, CDN2) being comprised in a set and being provided with respective caches, respective Directory Name Service or Domain Name Server (DNS) and respective content distribution systems to respective clients, said interface component (CIG) being susceptible of being associated to a  
15 respective network (CDN1) in said set of networks and co-operating with at least one similar interface component associated to another network (CDN2) in said set of networks, said interface component (CIG) being configured to collect routing data related to the association of said  
20 contents and the caches which contain them and characterised in that it comprises:

- at least a first interface module (RRI) for exchanging data with said at least one similar component,
- a second interface module (DNSI) for interfacing with  
25 the Directory Name Service (DNS) of the respective network, and

- a core (RRP) for collecting and processing the data received by the component and routing the respective requests, whereby said interface component (CIG) is  
30 susceptible of transferring said routing data to the directory name Service or Domain Name Server (DNS) of the respective network via said second interface module (DNSI).

8. Interface component according to claim 7, characterised in that it is configured to be controlled by  
35 a monitoring system and comprises:

- a third interface module (DII) for retrieving data on the availability of contents from the content distribution system on the respective network, and

- a fourth interface module (MII) for interacting with  
5 said monitoring system.

9. Interface component according to claim 7 or claim 8, characterised in that said core (RRP) comprises:

- a module for receiving data from said interface modules (RRI, DNSI, DII, MII) and extracting data on the  
10 status of the caches and/or of the contents of the respective network therefrom,

- a module for determining whether said contents require an updating or not, and

- a module for managing the updating by performing at  
15 least one step in the following group comprising:

- editing the respective database,
- editing the respective Directory Name Service tables,
- editing the respective log file archive,
- forwarding an update request message to said at least  
20 one similar interface component.

10. Interface component according to any of the claims from 7 to 9, characterised in that said at least a first interface module (RRI) is configured to communicate with a first interface module of said at least one similar  
25 component via CNAP protocol.

11. Interface component according to claim 10, characterised in that said at least a first interface module (RRI) is configured to translate from said CNAP protocol to a format which can be understood by a core  
30 (RRP) of said at least one similar interface component.

12. Interface component according to any of the claims from 7 to 11, characterised in that said communication between said first interface module (RRI) and a first interface module (RRI) of said at least one similar

interface component comprises the transmission of signals indicating quantities from the following group comprising:

- ID of the network in which said interface component is associated,
- 5     - IP address of the computer hosting the local interface component,
- IDs of interconnected systems via said interface component and said at least one similar interface component,
- 10    - IP addresses of the remote interface components of said internetworking systems,
- level of confidences of the internetworking network connection,
- at least one identification of physical
- 15    characteristics, such as the geographical distance of the connection between said interfacing component and said similar interface component.

13. Interface component according to any one of the previous claims from 7 to 12, characterised in that said

20 first interface module (RRI) is configured to exchange information with said at least one similar interface component via an IP transportation protocol such as the TCP protocol.

14. Interface component according to any of the

25 previous claims from 7 to 13, characterised in that said core (RRP) and said first interface module (RRI) are configured to exchange signals indicating quantities selected from the following group:

- URL identifying the content to which the message
- 30    refers,
- IP address of the cache which distributes the content,
- ID of the Content Delivery Network to which the cache belongs,
- 35    - cache state,

- content state in the cache,
- life time of routing data.

15. Interface component according to claim 8, characterised in that said fourth interface module (MII) is  
5 configured to transfer to said core (RRP) signals indicating quantities from the following group comprising:

- IP address of the cache to which the message refers,
- percentage of CPU used by the cache,
- percentage of RAM used by the cache,
- 10 - percentage of disc used by the cache,
- percentage of users connected in relation to the maximum capacity of the involved cache service.

16. Interface component according to claim 8 or claim 15, characterised in that said third interface module (DII)  
15 is configured to send to said core (RRP) signals indicating quantities from the following group comprising:

- URL identifying the content to which the message refers,
- list of IP addresses of the caches of said content,
- 20 - level of confidence of said content,
- level of availability of said content,
- cache state,
- life time of routing data.

17. Interface component according to claim 16,  
25 characterised in that said quantity identifying the level of confidence of the content is susceptible of assuming distinct levels corresponding to at least one first level of confidence in the group comprising:

- a first level of confidence indicating that the  
30 contents may be exchanged by all networks in said set of networks,
- a second level of confidence indicating that the contents may be exchanged on by a selectively determined subset of networks in said set of networks.

18. Interface component according to any one of the previous claims from 7 to 17, characterised in that said second interface module (DNSI) is configured to communicate with the Directory Name Server (DNS) to update respective  
5 tables on the basis of signals indicating quantities from the following group comprising:

- ID of the operation to be carried out on the table of said server, such as addition or deletion,
- type of register,
- 10 - name of the domain to which the message refers,
- entire URL of the content to which the message refers,
- IP address of the best cache to serve said domain,
- life time of the register.

15 19. Interface component according to any one of the previous claims from 7 to 18, characterised in that said core module comprises a memory hosting a data structure containing information on the state of the respective Content Delivery Network and similar internetworking  
20 networks.